

II. Listing of the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-34. (Canceled)

35. (Currently Amended) An intervertebral implant comprising:

a first member for engaging a first vertebra, the first member comprising a concave first surface, the concave first surface having a substantially constant first radius of curvature;

a second member for engaging a second vertebra, the second member comprising a convex second surface and a tapered surface extending outwardly from the convex second surface, the convex second surface having a substantially constant second radius of curvature, the second radius of curvature being smaller than the first radius of curvature; and

a center member positioned at least partially between the first member and the second member and in sliding articulating engagement with the first and second members, the center member comprising:

a convex third surface for articulating with the concave first surface of the first member, the third surface having a substantially constant third radius of curvature substantially similar to the first radius of curvature,

a concave fourth surface for articulating with the convex second surface of the second member, the concave fourth surface having a substantially constant fourth radius of curvature substantially similar to the second radius of curvature,

a convex fifth surface extending substantially around the concave fourth surface, the convex fifth surface having a substantially constant fifth radius of curvature substantially equal to the first radius of curvature, the convex fifth surface configured for articulating with the tapered surface of the second member, the convex fifth surface being spaced from the tapered surface in a neutral position and in contact with the tapered surface in an articulation position, and

a sidewall extending between the convex third surface and the convex fifth surface, the sidewall having a substantially circular outer profile;

wherein the first member [[,]] and the second member, ~~and center member~~ are formed of a relatively rigid biocompatible material and wherein the third and fourth surfaces of the center member are formed of an outer material that is harder than an inner material closer to a core of

the center member such that at least the third and fourth surfaces of the center member are not deformed by the sliding articulating engagement between the center member and the first and second members.

36-37. (Canceled)

38. (Previously Presented) The intervertebral implant of claim 35 wherein the convex second surface comprises a substantially semi-spherical protrusion.

39. (Canceled)

40. (Currently Amended) The intervertebral implant of claim 35, wherein the first member ~~[[,]] and the second member, and at least the third and fourth surfaces of the center member~~ are formed of a biocompatible metal.

41. (Currently Amended) The intervertebral implant of claim 35, wherein engagement of the convex fifth surface with the tapered surface of the second member in the articulation position limits the range of sliding articulating engagement between the center member and the second member.

42. (Previously Presented) The intervertebral implant of claim 35, wherein the first and second members are translatable with respect to one another via the sliding articulating engagement with the center member.

43. (Currently Amended) The intervertebral implant of claim 42, wherein engagement of the convex fifth surface with the tapered surface of the second member in the articulation position limits the range of translation between the first and the second members.

44. (Currently Amended) The intervertebral implant of claim 35, wherein the center member comprises a the core positioned between the third and fourth surfaces formed of an elastomeric material.

45. (Currently Amended) An intervertebral implant comprising:

a first member for fixedly engaging a first vertebral body, the first member comprising a first surface with a first curve defining a concave recess with a substantially circular boundary, the first curve having a first radius of curvature;

a second member for fixedly engaging a second vertebral body, the second member comprising a second surface with a second curve defining a convex projection with a substantially circular boundary, the second curve having a second radius of curvature smaller than the first radius of curvature; and

a center member positioned between the first member and the second member, the center member in sliding articulating engagement with the first and second members and comprising:

a convex third surface for movably mating with the concave recess defined by the first curve of the first surface, the third surface having a third radius of curvature substantially similar to the first radius of curvature,

a fourth surface having a concave central portion and a convex outer portion extending substantially around the concave central portion, the concave central portion for movably mating with the convex projection defined by the second curve of the second surface, the concave central portion having a substantially circular boundary and a fourth radius of curvature substantially similar to the second radius of curvature, and the convex outer portion having a fifth radius of curvature substantially similar to the first radius of curvature;

wherein the first and second members are translatable with respect to one another via the sliding articulating engagement with the center member and wherein the first and second members are biased towards a central alignment where the first and second members are substantially aligned with one another;

wherein the center member articulates with respect to the first and second members such that the convex outer portion of the center member is spaced from the second member in the central alignment and is in contact with a surface of the second member surrounding the convex projection in at least some articulation positions; and

wherein the first member [[,]] and the second member,~~and center member~~ are formed of a relatively rigid biocompatible material and wherein the third and fourth surfaces of the center member are formed of an outer material that is harder than an inner material closer to a core of the center member such that at least the third and fourth surfaces of the center member are not deformed by the sliding articulating engagement between the center member and the first and second members.

46. (Previously Presented) The intervertebral implant of claim 45, wherein the third and fourth surfaces of the center member each have substantially circular outer boundaries.

47. (Previously Presented) The intervertebral implant of claim 46, wherein the circular outer boundary of the third surface is substantially similar to the circular outer boundary of the fourth surface.

48. (Previously Presented) The intervertebral implant of claim 47, wherein the center member further includes a sidewall extending between the convex third surface and the fourth surface.

49. (Previously Presented) The intervertebral implant of claim 48, wherein the sidewall is substantially cylindrical.

50. (Previously Presented) The intervertebral implant of claim 45 wherein the substantially circular boundary of the convex projection of the second member has a first diameter and wherein the substantially circular boundary of the concave central portion of the center member has a second diameter, the second diameter being less than the first diameter.

51. (Previously Presented) The intervertebral implant of claim 50, wherein the second member includes a tapered surface extending from the circular boundary of the convex projection and wherein engagement of the convex outer portion of the center member with the tapered surface of the second member limits the range of sliding articulating engagement between the center member and the second member.

52. (Previously Presented) The intervertebral implant of claim 51, wherein the convex outer portion of the center member is spaced from the tapered surface of the second member in the central alignment.

53. (Previously Presented) The intervertebral implant of claim 52, wherein the relatively rigid biocompatible material is selected from the group consisting of cobalt-chrome alloys, stainless steel, titanium alloys, alumina, and zirconia.

54. (Previously Presented) The intervertebral implant of claim 52, wherein the relatively rigid biocompatible material is selected from the group consisting of polycrystalline diamond, pyrolytic carbon, polyetheretherketone (PEEK), ultra-high molecular weight polyethylene (UHMWPE), and cross-linked UHMWPE.

55. (New) An intervertebral implant comprising:

- a first member for fixedly engaging a first vertebral body, the first member comprising a first articulation surface defining a concave recess with a substantially circular boundary having a first diameter, the concave recess having a first radius of curvature;

- a second member for fixedly engaging a second vertebral body, the second member comprising a second articulation surface defining a convex projection with a substantially circular boundary having a second diameter smaller than the first diameter, the second curve having a second radius of curvature smaller than the first radius of curvature; and

- a center member positioned between the first and second members and in sliding and pivoting engagement with the first and second members, the center member comprising:

- a convex third articulation surface for movably mating with the concave recess defined by the first articulation surface, the third articulation surface having a substantially circular boundary with a third diameter less than the first diameter, the third articulation surface having a third radius of curvature substantially similar to the first radius of curvature,

- a concave fourth articulation surface for movably mating with the convex projection defined by the second articulation surface, the fourth articulation surface

having a substantially circular boundary with a fourth diameter less than the second diameter, the fourth articulation surface having a fourth radius of curvature substantially similar to the second radius of curvature, and

a motion-limiting surface surrounding the concave fourth surface;

wherein the first and second members are translatable and rotatable with respect to one another via the sliding and pivoting engagement with the center member and wherein in a neutral position the first and second members are substantially aligned with one another and the motion-limiting surface of the central member is spaced from the second member;

wherein in at least some articulation positions the motion-limiting surface of the center member contacts a surface of the second member surrounding the substantially circular boundary of the convex projection to limit a range of motion between the center member and the second member.

56. (New) The intervertebral implant of claim 55, wherein the surface of the second member surrounding the substantially circular boundary of the convex projection is tapered from the substantially circular boundary of the convex projection towards outer boundaries of the second member.